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LACK, David
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Some Insects from the Scoresby Sound Region, East Greenland, with an Account of the Fauna of a Nunatak.

By DAVID LACK, B.A.

THE following collection was made in August 1933 while I was a member of the Cambridge expedition to Scoresby Sound, in lat. 70° N., of which B. B. Roberts is publishing an account in the 'Geographical Journal.' The main collection was made round Hurry Inlet, a subsidiary fjord running northward from Scoresby Sound, between August 1 and 15. Most were taken in Jameson Land,

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on the west side of the inlet, others in Liverpool Land on the east. In addition, a small collection was made round the Eskimo settlement at Rosenvingen Bay on August 18, and another further south at Cape Dalton on August 20.

I wish to record my indebtedness to Dr. J. B. Charcot, who gave the expedition a passage to Scoresby Sound, and to all the scientists, officers, and crew of 'Pourquoi Pas?' for their continual help and kindness. A species of moth hitherto undescribed has been named after Dr. Charcot. I must also thank G. C. L. Bertram and B. B. Roberts, my two companions, for their great assistance in the field, and the various specialists who have identified the insects brought back. Most of the collection has been presented to the British Museum (Natural History).

All the main groups of insects were collected except the Anoplura, Mallophaga, and Aphaniptera, but very little time was given to the Collembola. Spiders were also collected. So short was the stay that the collection cannot be considered representative of the region visited, and many forms which emerge only earlier in the summer must have been passed over. A typical set of the insects was collected so that their ability to withstand low temperatures might be studied. The results of this investigation are being published separately by Bertram*, who is hoping to correlate the minimum temperature at which the insects are active with their distribution in the Arctic.

The problem of whether animal life survived the glacial epoch in Greenland and other Arctic countries, or whether all life has colonised since that time (by the air and other means), has long been disputed. It was thought that the presence or absence of life on a nunatak, which represents the severest conditions of ice-free land in the Arctic, might throw light on this point. It is usually maintained that, however severe the glaciation, there would always be some land free of ice and snow, perhaps the tops of the mountains and perhaps a coastal belt. Mr. N. E. Odell, a member of Miss Boyd's expedition 1933, informs me that erratics have been found on a number of the highest mountain summits in the Franz Joseph Fjord area, indicating that the mountains of East Greenland, at least in this area, were completely

* In 'Journal of Animal Ecology.'

submerged during the glacial period. On the other hand, in Iceland there is evidence that the glaciation reached only a certain height on the mountains, the rest presumably projecting as nunataks. It therefore seems probable that any forms found on a nunatak would have been able to survive the glaciation, at least in Iceland. For these forms there would be no need to suppose a subsequent colonisation by air or other means.

On August 9, Bertram, Roberts, and I crossed to the east side of Hurry Inlet, and then climbed to and crossed the small ice-cap in the centre of Liverpoool Land, to a peak about 3000 feet high overlooking the Liverpool Coast. This peak was completely surrounded by ice, having some five miles of ice-cap to the west and big glaciers on the other three sides. At the time of our visit, 12 P.M., the temperature was below freezing-point. We found a patchy vegetation of both Cryptogams and Phanerogams with a small amount of soil. Samples of this were taken back to the camp, where they were analysed carefully by means of a Berlese funnel. Three animal groups were represented as follows :—

COLLEMBOLA.—*Folsomia fimetaria* (L.), many.
Isotoma cinerea (Nic.), several.
Isotoma sensibilis Tulb., many.

All the above are very widely distributed species.

DIPTERA : CHIRONOMIDÆ.—Five larvæ of the subgenus *Smittia* of *Spaniotoma* (sometimes known as *Camptocladius* or *Phœnocladius*). Dr. F. W. Edwards, who identified these specimens, adds that this is a widely distributed genus whose larvæ are commonly found at the roots of grasses and moss.

ARACHNIDA.—One very young *pullus* of the subfamily Erigoninæ of the Linyphiidæ, perhaps in the genus *Erigone* itself. A. R. Jackson, who identified the specimen so far as this was possible considering its age, remarks that it may have arrived on the nunatak by an aerial current and need not have resided there for any length of time. However, it may be noted that Bertram's experiments showed that most spiders remained active at temperatures just below freezing-point, so that it seems possible that spiders could exist on the nunatak. Hence the three

species of Collembola and the Chironomid, and possibly the spider, could presumably survive a glaciation provided that some land remained free of ice.

The following list includes all the orders of insects collected except the Diptera, which are not yet identified. A. Roman's account of the Ichneumonidæ and A. R. Jackson's account of the spiders will be found as separate papers consecutive to this one. The present collection emphasises the poorness of the insect fauna of East Greenland as compared with the West. Henriksen and Lundbeck (1918) have summarised the data on Greenland insects. Rémy (1928) has added further data for the east coast. In the following list one species of Lepidoptera is new to science, four species of Collembola, one Aphid, and one other species of Lepidoptera have not previously been recorded from Greenland, and two other species of Lepidoptera are new for East Greenland, but have previously been recorded from West Greenland. All the other species have been recorded before from East Greenland :—

Order COLLEMBOLA
(determined by Rev. Dr. G. H. Carpenter).

No special search was made for the species of this group, save in the investigation of the fauna of the nunatak. Actually most of the region investigated was unsuitable for these forms. They were not nearly so conspicuous an element in the fauna as, for instance, I found them on Bear Island, in the Barents Sea, in lat. 74° N., perhaps correlated with the comparative scarcity of moss and the much drier climate in Greenland. Rémy (1928) has given a list of the Greenland Collembola, of which twenty species have been found on the east coast. Eight species were recorded by me, of which four do not feature on Rémy's list and are new for Greenland. These four, which are asterisked in the list below, are all widely distributed forms.

Poduridæ.

**Onychiurus pseudarmatus* Folsom. 1, Point Constable, Hurry Inlet.

Entomobriidæ.

Folsomia fimetaria (L.). Many, Liverpool Land nunatak.

Folsomia sexoculata (Tulb.). 3, Point Constable.

**Isotoma cinerea* (Nic.). 1, Point Constable, several Liverpool Land nunatak.

Isotoma sensibilis Tulb. Many, Liverpool Land nunatak.

Isotoma viridis Bourlet. 1, Cape Dalton.

Sminthuridæ.

**Sminthurinus niger* (Lubb.). 1, Point Constable.

**Sminthurinus viridis* (L.). 3, Jameson Land.

Order THYSANOPTERA
(determined by F. Laing).

Physothrips sp., either *vulgatissimus* (Halid.) or very closely allied. 2, Jameson Land.

The specimens were in too poor condition to be identified. *P. vulgatissimus* has been recorded before from Greenland.

Order HEMIPTERA.

HETEROPTERA (determined by W. E. China).

Nysius grœnlandicus Zett. 1, Jameson Land.

Chlamydatus pulicarius Fall. 2, Jameson Land.

These are the only two species of the order known from East Greenland.

HOMOPTERA (determined by F. Laing).

Aphididæ.

Melanoxantherium sp. 1 winged male, Cape Dalton.

Mr. Laing writes that there is a good deal of confusion among the species of this genus. The above specimen is not a European species, and, judging from descriptions, it is allied to *M. media* (Baker) found in Connecticut. *M. populifolia* (Fitch) is apparently the only member of the genus found far north, in Popoff I., Alaska. The genus has not previously been recorded from Greenland.

Order TRICHOPTERA
(determined by M. E. Mosely).

Apatania arctica Boheman. Many, Liverpool Land.

The specimens included a male, which is rare and was formerly considered a different species *A. palméni* Sahlberg,

see Lack (1933) for the capture of a pair *in coitu* on Bear Island, and for the references to the literature on this point. *A. arctica* is the only species of the order known from East Greenland, though several others occur on the west coast.

Order LEPIDOPTERA.

Butterflies (determined by N. D. Riley).

Colias hecla Lefeb. 2 males, 1 female, Jameson Land.

Argynnis chariclea var. *arctica* Zett. 6 males, 3 females, Jameson Land.

Cupido orbitulus franklini Curtis. 1, Jameson Land.

The above three species, and also one other, *Argynnis polaris* Boisduval, have been previously recorded from East Greenland.

Moths (determined by W. H. Tams, save for the *Phthorimœa* by E. Meyrick).

Laodamia fusca Haworth. 4, Jameson Land.

Sympistis zetterstedtii Staudinger. 10, Jameson Land.

Cidaria polata byssata Aurivillius. 15, Jameson Land.

Eumichtis sommeri Lefeb. 2, Milne Land, given to me by Dr. Parat and M. Drach of the French Expedition, who were investigating the geology in Milne Land while we were in Hurry Inlet. This species has been recorded from West Greenland, but not previously from East.

Scoparia centuriella Schiffermüller. 2, Jameson Land. This species has also not previously been recorded from East Greenland, but is known on the west coast.

Pyrausta torvalis Möschler. 1, Jameson Land.

Phthorimœa charcoti Meyrick. 4, Cape Dalton. This hitherto undescribed species named in honour of Dr. J. B. Charcot, leader of the French expedition, is described by Meyrick (1934). No member of the genus has previously been found in Greenland.

(*Borkhausenia pseudospretella* Stn. One specimen was taken on board 'Pourquoi pas?' in Scoresby Sound, but was clearly introduced.)

In addition to the above, several larvæ of a moth of the Arctiinæ group were found under stones in Jameson Land. W. H. Tams notes that these are very possibly *Hyphoraia lapponica* Thunberg, found in Arctic North America, of which specimens of the larva are in the British Museum. He adds that identification from the larva alone is unsafe. No member of the family Arctiidæ has previously been recorded from Greenland.

Eighteen species of moth have previously been recorded from East Greenland. The present collection brings the list to twenty-two, two of the additions being new to the whole of Greenland and one to science.

Order COLEOPTERA
(determined by K. G. Blair).

Colymbetes dolabratus var. *grœnlandicus* Aubé. One, Jameson Land.

Coccinella transversoguttata Fald. 3 adults, also larvæ and pupæ, Jameson Land.

Gnypeta sp., possibly *cavicollis* Sahlb. 1, under a stone in Jameson Land. The antennæ are, unfortunately, missing, but the specimen agrees with the description of *G. cavicollis*, especially in having the legs black. There are no specimens for comparison in the British Museum. *G. cavicollis* is the only species of the genus recorded from Greenland, a single specimen having been obtained on Pendulum Island in 74° N.

Twelve species of Coleoptera have been previously recorded from East Greenland, but only the above three have so far been recorded as far north as Scoresby Sound.

Order HYMENOPTERA APOIDEA
(determined by O. W. Richards).

Bombus arcticus K. 6 males and 1 worker, Jameson Land and Liverpool Land.

Bombus hyperboreus Schönh. 1 male, Jameson Land.

These are the only two species of the group known from Greenland (*Richards*, 1927). *B. kirbyellus* Curt., recorded from Scoresby Sound by Rémy (1928 *b*), presumably refers to *B. arcticus* K.

(The Ichneumonidæ are considered in a separate paper by A. Roman.)

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